

PRODUCT DATA SHEET

914 Continuous Emission Monitor (CEM)

Built-to-order CEM system

The 914 CEM system uses dry extractive sampling techniques designed to meet government regulations for all types of compliance monitoring. The sample extraction system is designed for primary conditioning of the sample gas. Combining a temperature-controlled conditioning unit and a heated sampling line ensures integrity of the sample gas. The sample gas is then dried (moisture removed) as required and introduced into the analyzers.

The CEM system uses AMETEK's 9900RM for sulfur dioxide (SO₂) and oxides of nitrogen (NO_x) analysis, which are the standard parameters. The 9900RM can monitor other ultraviolet (UV) absorbing species such as hydrogen sulfide (H₂S), chlorine (Cl₂) and provides the measurement of oxygen (O₂) with an integrated paramagnetic cell. If carbon monoxide (CO) and carbon dioxide (CO₂) analysis are required, an infrared analyzer is integrated into the system.

Mass flow measurement to determine mass emission of measured species is provided by utilizing devices like S-type Pitot tube or optical detection along with temperature measurement. The instruments are mounted in a free-standing standard 19-inch open rack.

Optional considerations are an enclosed rack, a free-standing enclosure or a walk-in shelter for environmental reasons. Optional on the CEM system is the computer data acquisition system (DAS) or programmable logic controller (PLC), providing data collection and control functions for customer-specific reporting and autocalibration.



KEY BENEFITS

- Utilizes UV - the most precise direct measurement device for SO₂
- Direct measure of nitric oxide and nitrogen dioxide (NO and NO₂)
- Addition of flue gas velocity and moisture measurements for mass flow applications
- Unique sample-handling solutions to overcome acid mist and adverse operations
- Fully customizable for every parameter and operational condition

APPLICATIONS

- Dry CEM system
- SO₂ flue gas scrubbers

KEY MARKETS

- Sulfur recovery/tail gas treating
- Sulfuric acid plants
- Nitric acid plants

PERFORMANCE SPECIFICATIONS

Methodology	Standard - UV, zirconium oxide (ZrO ₂), paramagnetic O ₂
Calibration	DAS/DCS/PLC or selected analyzer, initiated automatically using instrument air and calibration gas standards
Sensitivity	Instrument-dependent
Outputs	Designed to meet customer specifications (standard voltage, current or serial)
Range	Designed to meet customer specifications
Reporting	Customer-defined format for reporting or regulatory agencies
Alarms/calculations	Designed to meet customer specifications
Electrical requirement	120/208 VAC or 110/220/240 VAC 50-60 Hz
Typical flow	2 to 10 SCFH
Ambient temperature	Custom designed to meet user requirements
Physical dimensions	Application-dependent
AMETEK analyzers available	Multi-species UV + paramagnetic O ₂ ; Model 9000RM for SO ₂ , H ₂ S, NO, NO ₂ , NO _x , O ₂ , ammonia (NH ₃), Cl ₂
Mass flow	S-type pitot tube, optical, etc.
Single species NDIR	Various analyzer models available (Siemens, California Analytical, Servomex)
ZrO₂	Thermox O ₂ analyzers
Probes available	AWR emission probe AWR mass emission probe M&C probe, c/w calibration port, (optional, blow back, and sample isolation valving) AWR velocity probe (used separate with M&C for mass) Universal probe for Division II applications
Sample systems	Sample lines – temperature-controlled, self-limiting electrical (O'Brien, Technical Heaters) Sample dryers – thermoelectric (Baldwin Environmental, Inc. and others)
Rack components	Basic 19" x 24" rack (no panels) Pressure control panel Temperature control panel Customer termination and system alarm panel Flow distribution panel(s) Rack fans (optional)
Data acquisition and control system	Allan Bradley PLC; WTC and VIVICOM DAS (others available upon request)
Shelter/enclosure	Open 19" x 24" rack Enclosed 19" x 24" rack Fiberglass or metal free-standing enclosure AMETEK's standard walk-in shelters (optional desk/workbench)
Area classification	Model 914 CEM rack system in General Purpose and Division II (purged)
Wetted components	316 SS tubing, fittings (Swagelok only) and cell construction Teflon tubing Quartz glass (cell windows)

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